

Raw Sequence Listing Error Summary

ERROR DETECTED SUGGESTED CORRECTION

SERIAL NUMBER: 09/72,479

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

- 1 Wrapped Nucleics The number/text at the end of each line "wrapped" down to the next line.
This may occur if your file was retrieved in a word processor after creating it.
Please adjust your right margin to .3, as this will prevent "wrapping".
- 2 Wrapped Aminos The amino acid number/text at the end of each line "wrapped" down to the next line.
This may occur if your file was retrieved in a word processor after creating it.
Please adjust your right margin to .3, as this will prevent "wrapping".
- 3 Incorrect Line Length The rules require that a line not exceed 72 characters in length. This includes spaces.
- 4 Misaligned Amino Acid Numbering The numbering under each 5th amino acid is misaligned. This may be caused by the use of tabs between the numbering. It is recommended to delete any tabs and use spacing between the numbers.
- 5 Non-ASCII This file was not saved in ASCII (DOS) text, as required by the Sequence Rules.
Please ensure your subsequent submission is saved in ASCII text so that it can be processed.
- 6 Variable Length Sequence(s) contain n's or Xaa's which represented more than one residue.
As per the rules, each n or Xaa can only represent a single residue.
Please present the maximum number of each residue having variable length and indicate in the (ix) feature section that some may be missing.
- 7 PatentIn ver. 2.0 "bug" A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequence(s) . Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies primarily to the mandatory <220>-<223> sections for Artificial or Unknown sequences.
- 8 Skipped Sequences (OLD RULES) Sequence(s) missing. If intentional, please use the following format for each skipped sequence:
(2) INFORMATION FOR SEQ ID NO:X:
(i) SEQUENCE CHARACTERISTICS:(Do not insert any headings under "SEQUENCE CHARACTERISTICS")
(xi) SEQUENCE DESCRIPTION:SEQ ID NO:X:
This sequence is intentionally skipped

Please also adjust the "(iii) NUMBER OF SEQUENCES:" response to include the skipped sequence(s).
- 9 Skipped Sequences (NEW RULES) Sequence(s) missing. If intentional, please use the following format for each skipped sequence.
<210> sequence id number
<400> sequence id number
000
- 10 Use of n's or Xaa's (NEW RULES) Use of n's and/or Xaa's have been detected in the Sequence Listing.
Use of <220> to <223> is MANDATORY if n's or Xaa's are present.
In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.
- 11 J Use of <213>Organism (NEW RULES) Sequence(s) are missing this mandatory field or its response.
4.
- 12 Use of <220>Feature (NEW RULES) Sequence(s) are missing the <220>Feature and associated headings.
Use of <220> to <223> is MANDATORY if <213>ORGANISM is "Artificial" or "Unknown"
Please explain source of genetic material in <220> to <223> section.
(See "Federal Register," 6/01/98, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of new Rules)
- 13 PatentIn ver. 2.0 "bug" Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing).
Instead, please use "File Manager" or any other means to copy file to floppy disk.

OIPE

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
 TIME: 07:23:33

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

**Does Not Comply
 Corrected Diskette Needed**

3 <110> APPLICANT: Coit, Doris
 4 Medina-Selby, Angelica
 5 Selby, Mark
 6 Houghton, Michael
 8 <120> TITLE OF INVENTION: NOVEL HCV NON-STRUCTURAL POLYPEPTIDE
 10 <130> FILE REFERENCE: PP01617.002
 12 <140> CURRENT APPLICATION NUMBER: US/09/721,479
 13 <141> CURRENT FILING DATE: 2000-11-22
 15 <160> NUMBER OF SEQ ID NOS: 19
 17 <170> SOFTWARE: PatentIn Ver. 2.0

ERRORED SEQUENCES

621 <210> SEQ ID NO: 2
 622 <211> LENGTH: 1771
 623 <212> TYPE: PRI
 624 <213> ORGANISM: Hepatitis C virus
 626 <220> FEATURE:
 627 <223> OTHER INFORMATION: Description of Artificial Sequence: Hepatitis C pns345
 629 <400> SEQUENCE: 2
 630 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
 631 1 5 10 15
 633 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 634 20 25 30
 636 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 637 35 40 45
 639 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 640 50 55 60
 642 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 643 65 70 75 80
 645 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 646 85 90 95
 648 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 649 100 105 110
 651 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 652 115 120 125
 654 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 655 130 135 140
 657 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 658 145 150 155 160
 660 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 661 165 170 175
 663 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 664 180 185 190
 666 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 667 195 200 205

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```

669 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
670      210      215      220
672 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
673 225      230      235      240
675 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
676      245      250      255
678 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
679      260      265      270
681 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
682      275      280      285
684 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
685      290      295      300
687 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
688 305      310      315      320
690 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
691      325      330      335
693 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
694      340      345      350
696 Val Cys Ala Arg Ala Gln Ala Pro Pro Ser Trp Asp Gln Met Trp
697      355      360      365
699 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
700      370      375      380
702 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
703 385      390      395      400
705 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
706      405      410      415
708 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
709      420      425      430
711 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
712      435      440      445
714 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
715      450      455      460
717 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
718 465      470      475      480
720 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
721      485      490      495
723 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
724      500      505      510
726 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
727      515      520      525
729 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
730      530      535      540
732 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
733 545      550      555      560
735 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
736      565      570      575
738 Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
739      580      585      590
741 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu

```

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```

742          595          600          605
744 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
745          610          615          620
747 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
748 625          630          635          640
750 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
751          645          650          655
753 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
754          660          665          670
756 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
757          675          680          685
759 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Arg Val
760          690          695          700
762 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
763 705          710          715          720
765 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
766          725          730          735
768 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
769          740          745          750
771 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
772          755          760          765
774 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
775          770          775          780
777 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
778 785          790          795          800
780 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
781          805          810          815
783 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
784          820          825          830
786 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
787          835          840          845
789 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
790          850          855          860
792 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
793 865          870          875          880
795 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
796          885          890          895
798 Cys Lys Pro Leu Leu Arg Gln Glu Val Ser Phe Arg Val Gly Leu His
799          900          905          910
801 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
802          915          920          925
804 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
805          930          935          940
807 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
808 945          950          955          960
810 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
811          965          970          975
813 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
814          980          985          990

```

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```

816 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
817 995 1000 1005
819 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
820 1010 1015 1020
822 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 823 1025 1030 1035 1040
825 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
826 1045 1050 1055
828 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
829 1060 1065 1070
831 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Arg
832 1075 1080 1085
834 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
835 1090 1095 1100
837 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Thr Ser Gly Ile
E--> 838 1105 1110 1115 1120
840 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
841 1125 1130 1135
843 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
844 1140 1145 1150
846 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
847 1155 1160 1165
849 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
850 1170 1175 1180
852 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
E--> 853 1185 1190 1195 1200
855 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
856 1205 1210 1215
858 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Val
859 1220 1225 1230
861 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
862 1235 1240 1245
864 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
865 1250 1255 1260
867 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 868 1265 1270 1275 1280
870 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
871 1285 1290 1295
873 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
874 1300 1305 1310
876 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
877 1315 1320 1325
879 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
880 1330 1335 1340
882 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
E--> 883 1345 1350 1355 1360
885 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
886 1365 1370 1375
888 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys

```

When numbering
first amino acid
on a line, begin
number directly
below first letter
of amino acid. Do
not extend number
into next amino acid.
Leave one space
between last number
and beginning of
next amino acid.

e.g. Glu 1025 | space | Arg

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```

      889      1380      1385      1390
891 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
892      1395      1400      1405
894 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
895      1410      1415      1420
897 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 898 425      1430      1435      1440
900 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
901      1445      1450      1455
903 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
904      1460      1465      1470
906 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
907      1475      1480      1485
909 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
910      1490      1495      1500
912 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
E--> 913 505      1510      1515      1520
915 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
916      1525      1530      1535
918 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
919      1540      1545      1550
921 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
922      1555      1560      1565
924 Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
925      1570      1575      1580
927 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
E--> 928 585      1590      1595      1600
930 Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
931      1605      1610      1615
933 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
934      1620      1625      1630
936 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
937      1635      1640      1645
939 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
940      1650      1655      1660
942 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
E--> 943 665      1670      1675      1680
945 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
946      1685      1690      1695
948 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
949      1700      1705      1710
951 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
952      1715      1720      1725
954 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
955      1730      1735      1740
957 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala
E--> 958 745      1750      1755      1760
960 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg
961      1765      1770

```

*same
error*

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DATE: 12/07/2000
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Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

1566 <210> SEQ ID NO: 4
 1567 <211> LENGTH: 1771
 1568 <212> TYPE: PRT
 1569 <213> ORGANISM: Artificial Sequence
 W--> 1571 <220> FEATURE:
 W--> 1571 <223> OTHER INFORMATION:
 1571 <400> SEQUENCE: 4
 1572 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
 1573 1 5 10 15
 1575 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 1576 20 25 30
 1578 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 1579 35 40 45
 1581 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 1582 50 55 60
 1584 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 1585 65 70 75 80
 1587 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 1588 85 90 95
 1590 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 1591 100 105 110
 1593 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 1594 115 120 125
 1596 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 1597 130 135 140
 1599 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 1600 145 150 155 160
 1602 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 1603 165 170 175
 1605 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 1606 180 185 190
 1608 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
 1609 195 200 205
 1611 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
 1612 210 215 220
 1614 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
 1615 225 230 235 240
 1617 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
 1618 245 250 255
 1620 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
 1621 260 265 270
 1623 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
 1624 275 280 285
 1626 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
 1627 290 295 300
 1629 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
 1630 305 310 315 320
 1632 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
 1633 325 330 335

see pp 8-10, too

These numeric identifiers are mandatory

whenever (213)

response is

Unknown or

Artificial Sequence

(see item 12 on

Erra summary sheet)

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```

1635 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
1636          340          345          350
1638 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
1639          355          360          365
1641 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
1642          370          375          380
1644 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
1645 385          390          395          400
1647 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
1648          405          410          415
1650 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
1651          420          425          430
1653 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
1654          435          440          445
1656 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
1657          450          455          460
1659 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
1660 465          470          475          480
1662 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
1663          485          490          495
1665 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
1666          500          505          510
1668 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
1669          515          520          525
1671 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
1672          530          535          540
1674 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
1675 545          550          555          560
1677 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
1678          565          570          575
1680 Ala Ala Glu Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
1681          580          585          590
1683 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
1684          595          600          605
1686 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
1687          610          615          620
1689 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
1690 625          630          635          640
1692 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
1693          645          650          655
1695 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
1696          660          665          670
1698 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
1699          675          680          685
1701 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
1702          690          695          700
1704 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
1705 705          710          715          720
1707 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp

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Output Set: N:\CRF3\12072000\I721479.raw

```

1708          725          730          735
1710 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
1711          740          745          750
1713 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
1714          755          760          765
1716 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
1717          770          775          780
1719 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
1720 785          790          795          800
1722 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
1723          805          810          815
1725 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
1726          820          825          830
1728 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
1729          835          840          845
1731 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
1732          850          855          860
1734 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
1735 865          870          875          880
1737 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
1738          885          890          895
1740 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
1741          900          905          910
1743 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
1744          915          920          925
1746 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
1747          930          935          940
1749 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
1750 945          950          955          960
1752 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
1753          965          970          975
1755 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
1756          980          985          990
1758 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
1759          995          1000          1005
1761 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
1762          1010          1015          1020
1764 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 1765 1025          1030          1035          1040
1767 Phe Ala Glu Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
1768          1045          1050          1055
1770 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
1771          1060          1065          1070
1773 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Arg
1774          1075          1080          1085
1776 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
1777          1090          1095          1100
1779 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile
E--> 1780 1105          1110          1115          1120

```

fix numbering

RAW SEQUENCE LISTING

DATE: 12/07/2000

PATENT APPLICATION: US/09/721,479

TIME: 07:23:33

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

1782 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
1783                               1125                               1130                               1135
1785 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
1786                               1140                               1145                               1150
1788 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
1789                               1155                               1160                               1165
1791 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
1792                               1170                               1175                               1180
1794 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
E--> 1795 185                               1190                               1195                               1200
1797 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
1798                               1205                               1210                               1215
1800 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Glu Lys Lys Val
1801                               1220                               1225                               1230
1803 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
1804                               1235                               1240                               1245
1806 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
1807                               1250                               1255                               1260
1809 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 1810 265                               1270                               1275                               1280
1812 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
1813                               1285                               1290                               1295
1815 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
1816                               1300                               1305                               1310
1818 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
1819                               1315                               1320                               1325
1821 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
1822                               1330                               1335                               1340
1824 Val Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
E--> 1825 345                               1350                               1355                               1360
1827 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
1828                               1365                               1370                               1375
1830 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
1831                               1380                               1385                               1390
1833 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
1834                               1395                               1400                               1405
1836 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
1837                               1410                               1415                               1420
1839 Val Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 1840 425                               1430                               1435                               1440
1842 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
1843                               1445                               1450                               1455
1845 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
1846                               1460                               1465                               1470
1848 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
1849                               1475                               1480                               1485
1851 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
1852                               1490                               1495                               1500
1854 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:33

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

E--> 1857 505          1510          1515          1520
1857 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
1858          1525          1530          1535
1860 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
1861          1540          1545          1550
1863 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
1864          1555          1560          1565
1866 Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
1867          1570          1575          1580
1869 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
E--> 1870 585          1590          1595          1600
1872 Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
1873          1605          1610          1615
1875 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
1876          1620          1625          1630
1878 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
1879          1635          1640          1645
1881 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
1882          1650          1655          1660
1884 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
E--> 1886 665          1670          1675          1680
1887 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
1888          1685          1690          1695
1890 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
1891          1700          1705          1710
1893 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
1894          1715          1720          1725
1896 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
1897          1730          1735          1740
1899 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala
E--> 1900 745          1750          1755          1760
1902 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg
1903          1765          1770
3475 <210> SEQ ID NO: 9
3476 <211> LENGTH: 1771
3477 <212> TYPE: PRT
3478 <213> ORGANISM: Artificial Sequence
3480 <220> FEATURE:
3481 <223> OTHER INFORMATION: Description of Artificial Sequence: pd.deltANS3NS5
3483 <400> SEQUENCE: 9
3484 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
3485 1          5          10          15
3487 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
3488          20          25          30
3490 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
3491          35          40          45
3493 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
3494          50          55          60
3496 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser

```

13-15

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
 TIME: 07:23:34

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

```

3497 65 70 75 80
3499 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
3500 85 90 95
3502 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
3503 100 105 110
3505 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
3506 115 120 125
3508 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
3509 130 135 140
3511 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
3512 145 150 155 160
3514 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
3515 165 170 175
3517 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
3518 180 185 190
3520 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
3521 195 200 205
3523 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
3524 210 215 220
3526 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
3527 225 230 235 240
3529 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
3530 245 250 255
3532 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
3533 260 265 270
3535 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
3536 275 280 285
3538 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
3539 290 295 300
3541 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
3542 305 310 315 320
3544 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
3545 325 330 335
3547 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
3548 340 345 350
3550 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
3551 355 360 365
3553 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
3554 370 375 380
3556 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
3557 385 390 395 400
3559 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
3560 405 410 415
3562 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
3563 420 425 430
3565 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
3566 435 440 445
3568 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
3569 450 455 460

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:34

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

3571 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
3572 465 470 475 480
3574 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
3575 485 490 495
3577 Gln Thr Ala Ser Arg Glu Ala Glu Val Ile Ala Pro Ala Val Gln Thr
3578 500 505 510
3580 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
3581 515 520 525
3583 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
3584 530 535 540
3586 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
3587 545 550 555 560
3589 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
3590 565 570 575
3592 Ala Ala Glu Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
3593 580 585 590
3595 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
3596 595 600 605
3598 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
3599 610 615 620
3601 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
3602 625 630 635 640
3604 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
3605 645 650 655
3607 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
3608 660 665 670
3610 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
3611 675 680 685
3613 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
3614 690 695 700
3616 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
3617 705 710 715 720
3619 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
3620 725 730 735
3622 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
3623 740 745 750
3625 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
3626 755 760 765
3628 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Prp Arg Gly Asp Gly Ile
3629 770 775 780
3631 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
3632 785 790 795 800
3634 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
3635 805 810 815
3637 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
3638 820 825 830
3640 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
3641 835 840 845
3643 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly

```

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
 TIME: 07:23:34

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

```

3644      850      855      860
3646 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
3647 865      870      875      880
3649 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
3650      885      890      895
3652 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
3653      900      905      910
3655 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
3656      915      920      925
3658 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
3659      930      935      940
3661 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
3662 945      950      955      960
3664 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
3665      965      970      975
3667 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
3668      980      985      990
3670 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
3671      995      1000      1005
3673 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
3674      1010      1015      1020
3676 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 3677 1025      1030      1035      1040
3679 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
3680      1045      1050      1055
3682 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
3683      1060      1065      1070
3685 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Arg
3686      1075      1080      1085
3688 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
3689      1090      1095      1100
3691 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Thr Ser Gly Ile
E--> 3692 1105      1110      1115      1120
3694 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
3695      1125      1130      1135
3697 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
3698      1140      1145      1150
3700 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
3701      1155      1160      1165
3703 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
3704      1170      1175      1180
3706 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
E--> 3707 1185      1190      1195      1200
3709 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
3710      1205      1210      1215
3712 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
3713      1220      1225      1230
3715 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Glu Asp Val Leu
3716      1235      1240      1245

```

fix numbers

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479
 DATE: 12/07/2000
 TIME: 07:23:34

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

```

3718 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
3719      1250      1255      1260
3721 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 3722 265      1270      1275      1280
3724 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
3725      1285      1290      1295
3727 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
3728      1300      1305      1310
3730 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
3731      1315      1320      1325
3733 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
3734      1330      1335      1340
3736 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
E--> 3737 345      1350      1355      1360
3739 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
3740      1365      1370      1375
3742 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
3743      1380      1385      1390
3745 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
3746      1395      1400      1405
3748 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Glu Cys Cys Asp
3749      1410      1415      1420
3751 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 3752 425      1430      1435      1440
3754 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
3755      1445      1450      1455
3757 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
3758      1460      1465      1470
3760 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
3761      1475      1480      1485
3763 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
3764      1490      1495      1500
3766 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
E--> 3767 505      1510      1515      1520
3769 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
3770      1525      1530      1535
3772 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
3773      1540      1545      1550
3775 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
3776      1555      1560      1565
3778 Thr Phe Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
3779      1570      1575      1580
3781 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
E--> 3782 585      1590      1595      1600
3784 Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
3785      1605      1610      1615
3787 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
3788      1620      1625      1630
3790 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly

```

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479
 DATE: 12/07/2000
 TIME: 07:23:34

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

3791 1635 1640 1645
 3793 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
 3794 1650 1655 1660
 3796 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
 E--> 3797 665 1670 1675 1680
 3799 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
 3800 1685 1690 1695
 3802 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
 3803 1700 1705 1710
 3805 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
 3806 1715 1720 1725
 3808 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
 3809 1730 1735 1740
 3811 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala
 E--> 3812 745 1750 1755 1760
 3814 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg
 3815 1765 1770
 4761 <210> SEQ ID NO: 11
 4762 <211> LENGTH: 1771
 4763 <212> TYPE: PRT
 4764 <213> ORGANISM: Artificial Sequence
 4766 <220> FEATURE:
 4767 <223> OTHER INFORMATION: Description of Artificial Sequence:
 4768 pd.deltans3NS5.pj
 4770 <400> SEQUENCE: 11
 4771 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
 4772 1 5 10 15
 4774 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 4775 20 25 30
 4777 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 4778 35 40 45
 4780 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 4781 50 55 60
 4783 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 4784 65 70 75 80
 4786 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 4787 85 90 95
 4789 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 4790 100 105 110
 4792 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 4793 115 120 125
 4795 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 4796 130 135 140
 4798 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
 4799 145 150 155 160
 4801 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
 4802 165 170 175
 4804 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
 4805 180 185 190

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RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479
 DATE: 12/07/2000
 TIME: 07:23:34

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

```

4807 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
4808      195      200      205
4810 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
4811      210      215      220
4813 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
4814 225      230      235      240
4816 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
4817      245      250      255
4819 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
4820      260      265      270
4822 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
4823      275      280      285
4825 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
4826      290      295      300
4828 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
4829 305      310      315      320
4831 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
4832      325      330      335
4834 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
4835      340      345      350
4837 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
4838      355      360      365
4840 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
4841      370      375      380
4843 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
4844 385      390      395      400
4846 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
4847      405      410      415
4849 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Val Ala Ala
4850      420      425      430
4852 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
4853      435      440      445
4855 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
4856      450      455      460
4858 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
4859 465      470      475      480
4861 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
4862      485      490      495
4864 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Glu Thr
4865      500      505      510
4867 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
4868      515      520      525
4870 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
4871      530      535      540
4873 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
4874 545      550      555      560
4876 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
4877      565      570      575
4879 Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala

```

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
 TIME: 07:23:34

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

4880          580          585          590
4882 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
4883          595          600          605
4885 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
4886          610          615          620
4888 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
4889 625          630          635          640
4891 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
4892          645          650          655
4894 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
4895          660          665          670
4897 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
4898          675          680          685
4900 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
4901          690          695          700
4903 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
4904 705          710          715          720
4906 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
4907          725          730          735
4909 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
4910          740          745          750
4912 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
4913          755          760          765
4915 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
4916          770          775          780
4918 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
4919 785          790          795          800
4921 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
4922          805          810          815
4924 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
4925          820          825          830
4927 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
4928          835          840          845
4930 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
4931          850          855          860
4933 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
4934 865          870          875          880
4936 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
4937          885          890          895
4939 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
4940          900          905          910
4942 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
4943          915          920          925
4945 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
4946          930          935          940
4948 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
4949 945          950          955          960
4951 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
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RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
 TIME: 07:23:34

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4958          995          1000          1005
4960 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
4961          1010          1015          1020
4963 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 4964 025          1030          1035          1040
4966 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
4967          1045          1050          1055
4969 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
4970          1060          1065          1070
4972 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Arg
4973          1075          1080          1085
4975 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
4976          1090          1095          1100
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E--> 4979 105          1110          1115          1120
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4982          1125          1130          1135
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4987 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
4988          1155          1160          1165
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4991          1170          1175          1180
4993 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
E--> 4994 185          1190          1195          1200
4996 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
4997          1205          1210          1215
4999 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
5000          1220          1225          1230
5002 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
5003          1235          1240          1245
5005 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
5006          1250          1255          1260
5008 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 5009 265          1270          1275          1280
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5021          1330          1335          1340
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5026 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser

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*fix
 hunting*

RAW SEQUENCE LISTING

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5038 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 5039 425          1430          1435          1440
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5042          1445          1450          1455
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5045          1460          1465          1470
5047 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
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E--> 5054 505          1510          1515          1520
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5080 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
5081          1650          1655          1660
5083 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
E--> 5084 665          1670          1675          1680
5086 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
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E--> 5099 745          1750          1755          1760

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 5107 <212> TYPE: DNA
 5108 <213> ORGANISM: Artificial Sequence
 5110 <220> FEATURE:
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 5112 pd.delta.NS3NS5.pj.core121
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 5115 <221> NAME/KEY: CDS
 5116 <222> LOCATION: (12679)..(18354)
 5119 <400> SEQUENCE: 12
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 5124 eggatcaacg ttcttaatat cctgaatct tccacaattg atgaaaagag ctaggaaagag 180
 5126 gaattgggtat aaagtgtttt tttttgtaaa tctcgaagta tactcaaacg aatttagtat 240
 5128 tttctcagtg atctccaga tgccttcacc ctacattaga agtgccttaa gcattttttt 300
 5130 actgtggcta ttcccttat ctgcttcttc cgtatgattcg aactgtaatt gcaaaactact 360
 5132 tacaatatca gtgatatcag attgalgttt ttgtccatag taaggaaata ttgtaaatte 420
 5134 ccaagcaggga atcaatttct ttaattgagc ttccagaatt gttgctttt gcgtcttgta 480
 5136 tttaaactgg agtgatttat tgacaatate gaaactcagc gaattgctta tgatagtatt 540
 5138 atagctcatg aatgtggctc tcttgattgc tgttccgtta tgtgtaata tccaacataa 600
 5140 atagglttagt tcagcagcac ataattctat ttctcaccct gaaggtcttt caaaccttct 660
 5142 cacaacttga cgaacaaaga ccttaggttg tgtttacat aatatatcaa atttggtcat 720
 5144 gcttagcgcc gatcttgtgt gcaattgata tctagtttca actactctat ttatcttgta 780
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5198 ctagaanaata taggaacttc agagcgcttt tgaaaaccaaa aagcgctctg aagacgcact 2400
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 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
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5412 aaatccccca acgtgagttt tegtccact gacgctcaga cccgtagaaa aaqatcaaa 8820
5414 gatcttcttg agatctttt tttctgcgcg taactgctg cttgcaacaa aaaaaaccac 8880
5416 cgtacccacg ggtggtttgt ttgcggatc aagagctacc aactcttttt ccgaaggtaa 8940
5418 ctgqcttcag cagagcgag ataccacaata ctgtccttct aglgtagccg tagtttagcc 9000
5420 accacttcaa gaactctgta gcaacgccta cataccctgc tctgctaate ctgttaccag 9060
5422 ttgctgctgc cagtggcgat aagtcgtgtc ttaccggggt ggactcaaga cyatagttac 9120
5424 cggataaagg gcaagcgctg ggtgaaacgg qgggttcgtg caccagaccc agcttgaggc 9180
5426 gaacgacctt caccgaactg agatacctac agcgttagct atgagaaagc gccacgcttc 9240
5428 ccgaagggag aaaggcgagc aggtatccgg taagcgcgag ggtcggaaca gggagcgcca 9300
5430 cgaaggagct tccaggggga aacgcctggg atctttatag tctgttcggg tttgcgcacc 9360
5432 tctgacttga gctgagttt ttgtgatgct cgtcaggggg ggcgaaccta tggaaaaacg 9420
5434 ccagcaacgc ggccttttta cgttctctgg ccttttctg gcttttctg ccatgltct 9480
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5438 ccgctcgcgg cagccgaacg accgagcgca gcgagtcagt ggcgaggaag ggcgaagagc 9600
5440 gctgatgag gtattttctc cttaacgcat tgtgcggtat ttacacccgc atatggtgca 9660
5442 ctctcagtc aatctgctct gatcccgcat agttaagcca gtataacac cgtatctgct 9720
5444 acgtgactgg gtcattgctg cgcgccgaca ccgcaccaaa cccgctgacg cgcctgacg 9780
5446 ggtttgtctg ctcccgccat ccgtttacag acaagctgtg accgtctccg ggaagctgcat 9840
5448 gtagtcagag ttttccacgt caccaccgaa acgcgcgagg cagctgcggt aaagctcacc 9900
5450 agcgtggtcg tgaagcgatt cacagatgtc tgcctgttca tccgcgtcca gctcgttgag 9960
5452 tttctccaga agcgttaaty tctggcttct gataaagcgg gccatgttaa gggcggtttt 10020
5454 ttcctgtttg gtaactgatg cctccgtgta agggggatct ctgttcatgg gggtaatgat 10080
5456 accgatgaaa cgaagagaga tgcctacgat accggttact gatgatgaac atgcgccgtt 10140
5458 actggaacgt tgtgagggta aacaactgac ggtatggatg cgcggggacc agagaaaaat 10200
5460 cactcagggt caatgccagc gcttctgtaa tacagatgta ggtgttccac agggtagcca 10260
5462 gcagcatcct gcgatgcaga tccggaaact aatggtgcag ggcgctgact tccgcgtttc 10320
5464 cagactttac qaaacacgga aaccgaagac ctttcatggt gttgctcagg tgcgagacgt 10380
5466 tttgcagcag cagtcgcttc acgttctgct gcgtatcggt gatcattctt gctaacacgt 10440
5468 aaggcaacce cgcagccta gcgggtctct caacgacagg agcagatca tgcgcacccg 10500
5470 tggccaggac ccaacgctgc ccgagatgcy ccgcgtgcgg ctgctggaga tggcggacgc 10560
5472 gatggatatg ttctgccaag ggttgggttt cgcattcaca gttctccgca agaattgatt 10620
5474 ggtcccaatt cttggagtg tgaaatccgt agcgaggtgc cgcggcttc cttcagggtc 10680
5476 gaggtggccc ggctccatgc accgcagcgc aacgcgggga ggcagacaag gtataggcg 10740
5478 gcgctacaaa tccatgccaa ccggttccat gtgctcgccg agcgcgcata aatgcgcgtg 10800
5480 acgatcagcg gtccaatgat cgaagttagg ctggtaaagc ccgcgagcga tccctgaagc 10860
5482 tctccctgat ggtcgtcact taactgcctg gacagcatgg cctgcaacgc gggcatcccg 10920
5484 atgcgcgcgg aagcgagagc aatcataatg ggaagggcca tccagctcgt cgtcgcgaac 10980

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5486 gccagcaaga cgtageccag cgcgtcgccc gccatgccgg cgataatggc ctgcttctcg 11040
5488 ccgaaacggt tggtagcggg accagtgaag aaggcttgag cgaagggcgt caagattccg 11100
5490 aataccgcaa ggcacaggcc gatcatcgtc gcgtccagc gaaagcggtc ctgcgcgaaa 11160
5492 atgaccacaa gcgtgcggc cactgtctct acgagttgca tgataaagaa gacagtcata 11220
5494 agtgcggcga cgatagtcct gccccgcgcc caccggaagg agctgaactg gttgaaggct 11280
5496 ctcaaggcca tcggtcgagg atccttcaat atgcgcacat acgctgttat gttcaaggct 11340
5498 ccttcgitta agaagcaag cgtcttctct tttagaggat gtttcaagtt gttcaaatct 11400
5500 atcaaatgtt caaatcccca gtctgtatct agagcgttga atcgggtgat cgatttgtta 11460
5502 attaatgtta tgggtgtacc attaccaggt ctatgatata caatggcaaa ctgagcacaa 11520
5504 caataccagt ccgagataac tggcaccalc tctcccgtag tctcatctaa tttttcttcc 11580
5506 ggaatgaggt ccagatatac cgcacaacct ttattatggt ttccctgagg gaataataga 11640
5508 atgtcccatc cgaatccacc aattctaaac ctgggcgcat tgtatttcgg gtttgttaac 11700
5510 tcgttccagt caggaatggt ccacgtgaag ctatcttcca gcaaggtctc cacttcttca 11760
5512 tcaaatgtgt gagaatactc ccaatgctct tatctatggg acttccggga aacacagtac 11820
5514 cgatacttcc caattcgtct tcagagctca ttgtttgttt gaagagacta atcaagaagt 11880
5516 cgtttttctc aaaaaattaa tatcttaact gatagtttga tcaaaagggc aaaaagtgag 11940
5518 ggcacaacaa cggaaaaaac gtttctcaaa ttttctgatg ccaagaaact taaccagtct 12000
5520 tatctaaaaa ttgccttatg atcctgtctct ccggttacag cctgtgtaac tgattaatcc 12060
5522 tgcttttcta atcaccattc taatgtttta attaagggat tttgtcttca ttaacggctt 12120
5524 tcgctcataa aaatgttatg acgttttgcc cgcagcgccc aaaccatcca cttcacgaga 12180
5526 ctgatctcct ctgcgcgaac accgggcata tccaaactat aagttggaga aataagagaa 12240
5528 tttaagattg agagaatgaa aaaaaaaaaa ccttagttca taggtccatt ctcttagcgc 12300
5530 aactacagag aacagggcca caaacagcca aaaaacgggc acaacctcaa tggagtgatg 12360
5532 caacctgcct ggagtaaatg atgacacaag gcaattgacc cagcctatga tctatctcat 12420
5534 tttcttacac ctctatttac ctctgtctct ctctgatttg gaaaaagctg aaaaaaagg 12480
5536 ttgaaacag ttccctgaaa ttattccctc acttgactaa taagtatata aagacggtag 12540
5538 gtatlgattg taattctgta aatctatttc ttaaacctct taaattctac ttttatagtt 12600
5540 agtctttttt ttatgtttta aacaccaaga acttagtttc gaataaacac acataaacaa 12660
5542 acaagcttac aaaaacaaa atg gct gca tat gca gct caa ggc tat aag gtg 12711
5543 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val
5544 1 5 10
5546 cta gta etc aac ecc tct gtt gct gca aca ctg ggc ttt ggt gct tac 12759
5547 Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr
5548 15 20 25
5550 atg tcc aag gct cat ggg atc gat cct aac atc agg acc ggg gtg aga 12807
5551 Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg
5552 30 35 40
5554 aca att acc act ggc agc ecc atc acg tac tcc acc tac ggc aag ttc 12855
5555 Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe
5556 45 50 55
5558 ctt gcc gac ggc ggg tgc tgc ggg ggc gct tat gac ata ata att tgt 12903
5559 Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys
5560 60 65 70 75
5562 gac gag tgc cac tcc acg gat gcc aca tcc atc ttg ggc att gcc act 12951
5563 Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr
5564 80 85 90
5566 gtc ctt gac caa gca gag act gcg ggg gcg aga ctg gtt gtg etc gcc 12999
5567 Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala
5568 95 100 105

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5570 acc gcc acc cct ccg ggc tcc gtc act gtg ccc cat ccc aac atc gag 13047
5571 Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu
5572 110 115 120
5574 gag qtt gct ctg tcc acc acc gga gag atc cct ttt tac ggc aag gct 13095
5575 Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala
5576 125 130 135
5578 atc ccc ctc qaa gta atc aag ggg qgg aga cat ctc atc ttc tgt cat 13143
5579 Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His
5580 140 145 150 155
5582 tca aag aag aag tgc gac gaa ctc gcc gca aag ctg gtc gca ttg ggc 13191
5583 Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly
5584 160 165 170
5586 atc aat gcc gtg gcc tac tac cgc qgt ctt gac gtg tcc gtc atc ccg 13239
5587 Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro
5588 175 180 185
5590 acc agc ggc gat qtt gtc gtc gtg gca acc gat gcc ctc atg acc ggc 13287
5591 Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly
5592 190 195 200
5594 tat acc ggc gac ttc gac tgc gtg ata gac tgc aat acg tgt gtc acc 13335
5595 Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr
5596 205 210 215
5598 cag aca gtc gat ttc agc ctt gac cct acc ttc acc att gag aca atc 13383
5599 Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile
5600 220 225 230 235
5602 acg ctc ccc caa gat gct gtc tcc cgc act caa cgt cgg ggc aag act 13431
5603 Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr
5604 240 245 250
5606 ggc aag agg aag cca ggc atc tac aga ttt gtg gca ccg qgg gag cgc 13479
5607 Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg
5608 255 260 265
5610 ccc tcc ggc atg ttc gac tgc tcc gtc ctc tgt gag tgc tat gac gca 13527
5611 Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala
5612 270 275 280
5614 ggc tgt gct tgg tat gag ctc acg ccc gcc gag act aca gtt agg cta 13575
5615 Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu
5616 285 290 295
5618 cga gcg tac atg aac acc ccg ggg ctt ccc gtg tgc cag gac cat ctt 13623
5619 Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Glu Asp His Leu
5620 300 305 310 315
5622 gaa ttt tgg gag ggc gtc ttt aca ggc ctc act cat ata gat gcc cac 13671
5623 Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala His
5624 320 325 330
5626 ttt cta tcc cag aca aag cag agt ggg gag aac ctt cct tac ctg gta 13719
5627 Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val
5628 335 340 345
5630 gcg tac caa gcc acc gtg tgc gct agg gct caa gcc cct ccc cca tgc 13767
5631 Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser
5632 350 355 360
5634 tgg gac cag atg tgg aag tgt ttg att cgc ctc aag ccc acc ctc cat 13815

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5635 Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His
5636      365      370      375
5638 ggg cca aca ccc ctg cta tac aga ctg ggc gct gtt cag aat gaa atc 13863
5639 Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile
5640 380      385      390      395
5642 acc ctg acg cac cca gtc acc aaa tac atc atg aca tgc atg tgc gcc 13911
5643 Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala
5644      400      405      410
5646 gac ctg gag gtc gtc acg agc acc tgg gtg ctc gtt ggc ggc gtc ctg 13959
5647 Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu
5648      415      420      425
5650 gct gct ttg gcc gcg tat tgc ctg tca aca gcc tgc gtg gtc ata ttg 14007
5651 Ala Ala Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val
5652      430      435      440
5654 ggc agg gtc gtc ttg tcc ggg aag ccg gca atc ata cct gac agg gaa 14055
5655 Gly Arg Val Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu
5656      445      450      455
5658 gtc ctc tac cga gag ttc gat gag atg gaa gag tgc tct cag cac tta 14103
5659 Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu
5660 460      465      470      475
5662 ccg tac atc gag caa ggg atg atg ctc gcc gag cag ttc aag cag aag 14151
5663 Pro Tyr Ile Gln Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys
5664      480      485      490
5666 gcc ctc ggc ctc ctg cag acc gcg tcc cgt caa gca gag gtt atc gcc 14199
5667 Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala
5668      495      500      505
5670 cct gct gtc cag acc aac tgg caa aaa ctc gag acc ttc tgg gcg aag 14247
5671 Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys
5672      510      515      520
5674 cat atg tgg aac ttc atc agt ggg ata caa tac ttg gcg ggc ttg tca 14295
5675 His Met Trp Asn Phe Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser
5676      525      530      535
5678 acg ctg cct ggt aac ccc gcc att gct tca ttg atg gct ttt aca gct 14343
5679 Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala
5680 540      545      550      555
5682 gct gtc acc agc cca cta acc act agc caa acc ctc ctc ttc aac ata 14391
5683 Ala Val Thr Ser Pro Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile
5684      560      565      570
5686 ttg ggg ggg tgg gtg gct gcc cag ctc gcc gcc ccc ggt gcc gct act 14439
5687 Leu Gly Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr
5688      575      580      585
5690 gcc ttt gtg ggc gct gcc tta gct ggc gcc gcc atc ggc agt gtt gga 14487
5691 Ala Phe Val Gly Ala Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly
5692      590      595      600
5694 ctg ggg aag gtc ctc ata gac atc ctt gca ggg tat gcc gcg gcc gtg 14535
5695 Leu Gly Lys Val Leu Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val
5696      605      610      615
5698 gcg gga gct ctt gtg gca ttc aag atc atg agc ggt gag gtc ccc tcc 14583
5699 Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser

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5700 620          625          630          635
5702 acg gag gac ctg gtc aat cta ctg ccc gcc atc ctc tcg ccc gga gcc 14631
5703 Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala
5704          640          645          650
5706 ctc gta gtc ggc gtg gtc tgt gca gca ata ctg cgc cgg cac gtt ggc 14679
5707 Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly
5708          655          660          665
5710 ccg ggc gag ggg gca gtg cag tgg atg aac cgg ctg ata gcc ttc gcc 14727
5711 Pro Gly Glu Gly Ala Val Gln Trp Met Asn Arg Ile Ala Phe Ala
5712          670          675          680
5714 tcc cgg ggg aac cat gtt tcc ccc acg cac tac gtg cgg gag agc gat 14775
5715 Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp
5716          685          690          695
5718 gca gct gcc cgc gtc act gcc ata ctc agc agc ctc act gta acc cag 14823
5719 Ala Ala Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln
5720 700          705          710          715
5722 ctc ctg agg cga ctg cac cag tgg ata agc tcg gag tgt acc act cca 14871
5723 Leu Leu Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro
5724          720          725          730
5726 tgc tcc ggt tcc tga cta agg gac atc tgg gac tgg ata tgc gag gtg 14919
5727 Cys Ser Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val
5728          735          740          745
5730 ttg agc gac ttt aag acc tgg cta aaa gct aag ctc atg cca cag ctg 14967
5731 Leu Ser Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu
5732          750          755          760
5734 cct ggg atc ccc ttt gtg tcc tgc cag cgc ggg tat aag ggg gtc tgg 15015
5735 Pro Gly Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp
5736          765          770          775
5738 cga ggg gac gcc atc atg cac act cgc tgc cac tgt gga gct gag atc 15063
5739 Arg Gly Asp Gly Ile Met His Thr Arg Cys His Cys Gly Ala Glu Ile
5740 780          785          790          795
5742 act gga cat gtc aaa aac ggg acg atg agg atc gtc ggt cct agg acc 15111
5743 Thr Gly His Val Lys Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr
5744          800          805          810
5746 tgc agg aac atg tgg agt ggg acc ttc ccc att aat gcc tac acc acg 15159
5747 Cys Arg Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr
5748          815          820          825
5750 gcc ccc tgt acc ccc ctt cct gcg ccg aac tac acg ttc gcg cta tgg 15207
5751 Gly Pro Cys Thr Pro Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp
5752          830          835          840
5754 agg gtg tct gca gag gaa tac gtg gag ata agg caa gtc ggg gac ttc 15255
5755 Arg Val Ser Ala Glu Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe
5756          845          850          855
5758 cac tac gtg acg ggt atg act act gac aat ctt aaa tgc cgg tgc cag 15303
5759 His Tyr Val Thr Gly Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln
5760 860          865          870          875
5762 gtc cca tcg ccc gaa ttt ttc aca gaa ttg gac ggg gty cgc cta cat 15351
5763 Val Pro Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His
5764          880          885          890

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5766 agg ttt gcg ccc ccc tgc aag ccc ttg ctg cgg gag gag gta tca ttc 15399
5767 Arg Phe Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe
5768      895      900      905
5770 aga gta gga ctc cac gaa tac ccg gta ggg tcg caa tta cct tgc gag 15447
5771 Arg Val Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu
5772      910      915      920
5774 ccc gaa ccg gac gtg gcc gtg ttg acg tcc atg ctc act gat ccc tcc 15495
5775 Pro Glu Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser
5776      925      930      935
5778 cat ata aca gca gag gcg gcc ggg cga agg ttg gcg agg gga tca ccc 15543
5779 His Ile Thr Ala Glu Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro
5780 940      945      950      955
5782 ccc tct gtg gcc agc tcc tcg gct agc cag cta tcc gct cca tct ctc 15591
5783 Pro Ser Val Ala Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu
5784      960      965      970
5786 aag gca act tgc acc gct aac cat gac tcc cct gat gct gag ctc ata 15639
5787 Lys Ala Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile
5788      975      980      985
5790 gag gcc aac ctc cta tgg agg cag gag atg gcc gcc aac atc acc agg 15687
5791 Glu Ala Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg
5792      990      995      1000
5794 gtt gag tca gaa aac aaa gtg gtg att ctg gac tcc ttc gat ccg ctt 15735
5795 Val Glu Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu
5796      1005      1010      1015
5798 gtg gcg gag gag gac gag cgg gag atc tcc gta ccc gca gaa atc ctg 15783
5799 Val Ala Glu Glu Asp Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu
5800 1020      1025      1030      1035
5802 cgg aag tct cgg aga ttc gcc cag gcc ctg ccc gtt tgg gcg cgg ccg 15831
5803 Arg Lys Ser Arg Arg Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro
5804      1040      1045      1050
5806 gac tat aac ccc ccg cta gtg gag acg tgg aaa aag ccc gac tac gaa 15879
5807 Asp Tyr Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu
5808      1055      1060      1065
5810 cca cct gtg gtc cat gcc tgc ccg ctt cca cct cca aag tcc cct cct 15927
5811 Pro Pro Val Val His Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro
5812      1070      1075      1080
5814 gtg cct ccg cct cgg aag aag cgg acg gtg gtc ctc act gaa tca acc 15975
5815 Val Pro Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr
5816      1085      1090      1095
5818 cta tct act gcc ttg gcc gag ctc gcc acc aga agc ttt gcc agc tcc 16023
5819 Leu Ser Thr Ala Leu Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser
5820 1100      1105      1110      1115
5822 tca act tcc gcc att acg gcc gac aat acg aca aca tcc tct gag ccc 16071
5823 Ser Thr Ser Gly Ile Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro
5824      1120      1125      1130
5826 gcc cct tct gcc tgc ccc ccc gac tcc gac gct gag tcc tat tcc tcc 16119
5827 Ala Pro Ser Gly Cys Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser
5828      1135      1140      1145
5830 atg ccc ccc ctg gag ggg gag cct ggg gat ccg gat ctt agc gac ggg 16167

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5831 Met Pro Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly
5832      1150      1155      1160
5834 tca tgg tca acg gtc agt agt gag gcc aac gcg qag gat gtc gtg tgc 16215
5835 Ser Trp Ser Thr Val Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys
5836      1165      1170      1175
5838 tgc tca atg tct tac tct tgg aca ggc gca ctc gtc acc ccg tgc gcc 16263
5839 Cys Ser Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala
5840 1180      1185      1190      1195
5842 gcg gaa gaa cag aaa ctg ccc atc aat gca cta agc aac tgg ttg cta 16311
5843 Ala Glu Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu
5844      1200      1205      1210
5846 cgt cac cac aat ttg gtg tat tcc acc acc tca cgc agt gct tgc caa 16359
5847 Arg His His Asn Leu Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln
5848      1215      1220      1225
5850 agg cag aag aaa gtc aca ttt gac aga ctg caa gtt ctg gac agc cat 16407
5851 Arg Gln Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His
5852      1230      1235      1240
5854 tac cag gac gta ctc aag gag gtt aaa gca gcg gcg tca aaa gtg aag 16455
5855 Tyr Gln Asp Val Leu Lys Glu Val Lys Ala Ala Ser Lys Val Lys
5856      1245      1250      1255
5858 gct aac ttg cta tcc gta gag gaa gct tgc agc ctg acg ccc cca cae 16503
5859 Ala Asn Leu Leu Ser Val Glu Gln Ala Cys Ser Leu Thr Pro Pro His
5860 1260      1265      1270      1275
5862 tca gcc aaa tcc aag ttt ggt tat ggg gca aaa gac gtc cgt tgc cat 16551
5863 Ser Ala Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His
5864      1280      1285      1290
5866 gcc aga aag gcc gta acc cac atc aac tcc gtg tgg aaa gac ctt ctg 16599
5867 Ala Arg Lys Ala Val Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu
5868      1295      1300      1305
5870 gaa gac aat gta aca cca ata gac act acc atc atg gct aag aac gag 16647
5871 Glu Asp Asn Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu
5872      1310      1315      1320
5874 gtt ttc tgc gtt cag cct qag aag ggg ggt cgt aag cca gct cgt ctc 16695
5875 Val Phe Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu
5876      1325      1330      1335
5878 atc gtg ttc ccc gat ctg ggc gtg cgc gtg tgc gaa aag atg gct ttg 16743
5879 Ile Val Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu
5880 1340      1345      1350      1355
5882 tac gac gtg gtt aca aag ctc ccc ttg gcc gtg atg gga agc tcc tac 16791
5883 Tyr Asp Val Val Thr Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr
5884      1360      1365      1370
5886 gga ttc caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg 16839
5887 Gly Phe Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala
5888      1375      1380      1385
5890 tgg aag tcc aag aaa acc cca atg ggg ttc tgg tat gat acc cgc tgc 16887
5891 Trp Lys Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys
5892      1390      1395      1400
5894 ttt gac tcc aca gtc act gag agc gac atc cgt acg gag gag gca atc 16935
5895 Phe Asp Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile

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Input Set : A:\seqlist.txt

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5896      1405      1410      1415
5898 tac caa tgt tgt gac ctc gac ccc caa gcc cgc gtg gcc atc aag tcc 16983
5899 Tyr Gln Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser
5900 1420      1425      1430      1435
5902 ctc acc gag agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg 17031
5903 Leu Thr Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly
5904      1440      1445      1450
5906 gag aac tgc ggc tat cgc agg tgc cgc gcg agc ggc gta ctg aca act 17079
5907 Glu Asn Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr
5908      1455      1460      1465
5910 agc tgt ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt 17127
5911 Ser Cys Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys
5912      1470      1475      1480
5914 cga gcc gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac 17175
5915 Arg Ala Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp
5916      1485      1490      1495
5918 tta gtc gtt atc tgt gaa agc gcg ggg gtc cag gag gac gcg gcg agc 17223
5919 Leu Val Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser
5920 1500      1505      1510      1515
5922 ctg aga gcc ttc acg gag gct atg acc aag tac tcc gcc ccc cct ggg 17271
5923 Leu Arg Ala Phe Thr Gln Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly
5924      1520      1525      1530
5926 gac ccc cca caa cca gaa tac gac ttg gag ctc ata aca tca tgc tcc 17319
5927 Asp Pro Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser
5928      1535      1540      1545
5930 tcc aac gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac 17367
5931 Ser Asn Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr
5932      1550      1555      1560
5934 ctc acc cgt gac cct aca acc ccc ctc gcg aga gct qcg tgg gag aca 17415
5935 Leu Thr Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr
5936      1565      1570      1575
5938 gca aga cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt 17463
5939 Ala Arg His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe
5940 1580      1585      1590      1595
5942 gcc ccc aca ctg tgg gcg agg atg ata ctg atg acc cat ttc ttt agc 17511
5943 Ala Pro Thr Leu Trp Ala Arg Met Ile Leu Met Thr His Phe Phe Ser
5944      1600      1605      1610
5946 gtc ctt ata gcc agg gac cag ctt gaa cag gcc ctc gat tgc gag atc 17559
5947 Val Leu Ile Ala Arg Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile
5948      1615      1620      1625
5950 tac ggg gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att 17607
5951 Tyr Gly Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile
5952      1630      1635      1640
5954 caa aqa ctc cat ggc ctc agc qca ttt tca ctc cac agt tac tct cca 17655
5955 Gln Arg Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro
5956      1645      1650      1655
5958 ggt gaa atc aat agg gtg gcc gca tgc ctc aga aaa ctt ggg gta ccg 17703
5959 Gly Glu Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro
5960 1660      1665      1670      1675

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5962 ccc ttg cga gct tgg aga cac cgg gcc cgg agc gtc cgc gct agg ctt 17751
5963 Pro Leu Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu
5964 1680 1685 1690
5965 ctg gcc aga gga ggc agg gct gcc ata tgt qgc aag tac ctc ttc aac 17799
5966 Leu Ala Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn
5968 1695 1700 1705
5970 tgg qca qta aga aca aag ctc aaa ctc act cca ata gcg gcc gct qgc 17847
5971 Trp Ala Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly
5972 1710 1715 1720
5974 cag ctg gac ttg tcc ggc tgg ttc acg gct ggc tac agc ggg gga gac 17895
5975 Gln Leu Asp Leu Ser Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp
5976 1725 1730 1735
5978 att tat cac agc gtg tct cat gcc cgg ccc cgc tgg atc tgg ttt tgc 17943
5979 Ile Tyr His Ser Val Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys
5980 1740 1745 1750 1755
5982 cta ctc ctg ctt gct qca ggg gta qgc atc tac ctc ctc ccc aac cga 17991
5983 Leu Leu Leu Leu Ala Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg
5984 1760 1765 1770
5986 atg agc acg aat cct aaa cct caa aga aag acc aaa cgt aac acc aac 18039
5987 Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
5988 1775 1780 1785
5990 cgg cgg ccg cag gac gtc aag ttc ccg ggt ggc ggt cag atc gtt ggt 18087
5991 Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
5992 1790 1795 1800
5994 gga gtt tac ttg ttg ccg cgc aag gcc cct aga ttg ggt gtg cgc gcg 18135
5995 Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
5996 1805 1810 1815
5998 acg aga aag act tcc gag cgg tcc caa cct cga ggt aga cgt cag cct 18183
5999 Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
6000 1820 1825 1830 1835
6002 atc ccc aag gct cgt cgg ccc gag gcc aag acc tgg gct cag ccc ggg 18231
6003 Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly
6004 1840 1845 1850
6006 tac cct tgg ccc ctc tat ggc aat gag gcc tgc ggg tgg gcg gga tgg 18279
6007 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
6008 1855 1860 1865
6010 ctc ctg tct ccc cgt gcc tct cgg cct agc tgg ggc ccc aca gac ccc 18327
6011 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro
6012 1870 1875 1880
6014 cgg cgt agg tgg cgc aat ttg ggt aag taatagtcga ctttgttccc 18374
6015 Arg Arg Arg Ser Arg Asn Leu Gly Lys
6016 1885 1890
6018 actgtacttt tagetcgtae aaaatacaat ataactttca tttctccgta aacaacatgt 18434
6020 ttkeccatgt aatatccctt tctatttttc gtcccgltac caactttaca catacttlat 18494
6022 atagctattc acttctatac actaaaaaac taagacaatt ttaattttgc tgcctgccat 18554
6024 atttcaattt gttataaatt cctataattt atcctattag tagetaaaaa aagatgaatg 18614
6026 tgaatcgaat cctaaagaaa ttggatctga tccacaggac ggggttgggc gccatgatcg 18674
6028 cgtagtcgat agtgctccca agtagcqaag cgagcaggac tgggcggcgg ccaagcgggt 18734
6030 cggacagtyc tccgagaacy ggtgcgcata gaaattgcac caacgcatal agcgctagea 18794

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6032 gcacgcacata gtgaactggcg atgctgtcgg aatggaacgat atcccgcaag aggcgccggca 18854
6034 gtaccggcat aaccaagcct atgcctacag catccagggt gacgggtgcc aggatgacga 18914
6036 tgagcgcatt gttagatttc atacacggtg cctgaactgc ttagecaatt aactgtgata 18974
6038 aactaccgca ttaaagcltt ttctttccaa tttttttttt ttctgcatta taaaaatcat 19034
6040 tacgaccgag attcccgagt aataactgat ataattaaat tgaagctcta attlgtgagt 19094
6042 ttagtatata tgcatttaet tataatacag ttttttagtt ttgctggccg catcttctca 19154
6044 aatatgcttc ccagcctgct tttctgtaac gttcaccctc taccttagca tcccttccct 19214
6046 ttgcaaatag tctcttccca acaataataa tgtcagatcc tgtagagacc acatcatcca 19274
6048 cggttctata ctgttgaccc aatgcgtctc ccttgccttc taaacccaca cgggggtgtca 19334
6050 taatcaacca aicgtaacct tcatctcttc caccatgtc lctttgagca ataaagccga 19394
6052 taacaaaate ttgtgccttc ttgcgaatgt caacagtacc cttagtatat tctccagtag 19454
6054 atagggagcc cttgcatgac aattctgcta acatcaaaaag gctcttaggt tcccttggtta 19514
6056 etctctctgc cgcctgcttc aaaccgctaa caatacctgg gccaccacca ccgtgtgcat 19574
6058 tggtaattgc taccattctt gctattctgt atacaccgcc agagtactgc aatttgactg 19634
6060 tattaccaat gtcagcaaat ttctgtctct cgaagagtaa aaatttgtac ttggcggata 19694
6062 atgcctttag cggcttaact gtgccttcca tggaaaaate agtcaagata tccacatgtg 19754
6064 tttttagtta acaaattttg ggacctaatg cttaactaa cttcagtaat tcttgggtgg 19814
6066 tacgaacatc caatgaagca cacaagtlty ttgtcttttc gtgcattgata ttaaatagct 19874
6068 tggcagcaac aggaactagga tgagtagcag caegtctctt atatgtagct ttgcacatga 19934
6070 ttlatcttgc ttctctgcag gtttttgttc tgtgcagttg ggttaagaat actgggcaat 19994
6072 ttcatgtttc ttcaacacta catatgcgta tataatacaa tctaaagtctg tgcctcttcc 20054
6074 ttctgtcttc ctctgttctg gagattaccg aatcaaaaaa atttcaagga aaccgaaate 20114

```

E--> 6076 aaaaaaaaaa ataaaaaaaa aatgatgaat tgaaaagctt atcgat
 6079 <210> SEQ ID NO: 13
 6080 <211> LENGTH: 1892
 6081 <212> TYPE: PRT
 6082 <213> ORGANISM: Artificial Sequence
 6084 <220> FEATURE:
 6085 <223> OTHER INFORMATION: Description of Artificial Sequence:
 6086 pd.delta.NS3NS5.pj.core121
 6088 <400> SEQUENCE: 13
 6089 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
 6090 1 5 10 15
 6092 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 6093 20 25 30
 6095 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 6096 35 40 45
 6098 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 6099 50 55 60
 6101 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 6102 65 70 75 80
 6104 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 6105 85 90 95
 6107 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 6108 100 105 110
 6110 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 6111 115 120 125
 6113 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
 6114 130 135 140

20160

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Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

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6116 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
6117 145 150 155 160
6119 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
6120 165 170 175
6122 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
6123 180 185 190
6125 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
6126 195 200 205
6128 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
6129 210 215 220
6131 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
6132 225 230 235 240
6134 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
6135 245 250 255
6137 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
6138 260 265 270
6140 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
6141 275 280 285
6143 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
6144 290 295 300
6146 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
6147 305 310 315 320
6149 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
6150 325 330 335
6152 Lys Glu Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
6153 340 345 350
6155 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Glu Met Trp
6156 355 360 365
6158 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
6159 370 375 380
6161 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
6162 385 390 395 400
6164 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
6165 405 410 415
6167 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
6168 420 425 430
6170 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
6171 435 440 445
6173 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
6174 450 455 460
6176 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
6177 465 470 475 480
6179 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
6180 485 490 495
6182 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
6183 500 505 510
6185 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
6186 515 520 525
6188 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn

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6189      530      535      540
6191 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
6192 545      550      555      560
6194 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
6195      565      570      575
6197 Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
6198      580      585      590
6200 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
6201      595      600      605
6203 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
6204      610      615      620
6206 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
6207 625      630      635      640
6209 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
6210      645      650      655
6212 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
6213      660      665      670
6215 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
6216      675      680      685
6218 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
6219      690      695      700
6221 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
6222 705      710      715      720
6224 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
6225      725      730      735
6227 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
6228      740      745      750
6230 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
6231      755      760      765
6233 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
6234      770      775      780
6236 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
6237 785      790      795      800
6239 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
6240      805      810      815
6242 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
6243      820      825      830
6245 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
6246      835      840      845
6248 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
6249      850      855      860
6251 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
6252 865      870      875      880
6254 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
6255      885      890      895
6257 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
6258      900      905      910
6260 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
6261      915      920      925

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6263 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
6264      930      935      940
6266 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
6267 945      950      955      960
6269 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
6270      965      970      975
6272 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
6273      980      985      990
6275 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Gln Ser Glu Asn
6276      995      1000      1005
6278 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
6279      1010      1015      1020
6281 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 6282 1025      1030      1035      1040
6284 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
6285      1045      1050      1055
6287 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
6288      1060      1065      1070
6290 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Arg
6291      1075      1080      1085
6293 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
6294      1090      1095      1100
6296 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Thr Ser Gly Ile
E--> 6297 1105      1110      1115      1120
6299 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
6300      1125      1130      1135
6302 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
6303      1140      1145      1150
6305 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
6306      1155      1160      1165
6308 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
6309      1170      1175      1180
6311 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Gln Lys
E--> 6312 1185      1190      1195      1200
6314 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
6315      1205      1210      1215
6317 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
6318      1220      1225      1230
6320 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
6321      1235      1240      1245
6323 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
6324      1250      1255      1260
6326 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 6327 1265      1270      1275      1280
6329 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
6330      1285      1290      1295
6332 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
6333      1300      1305      1310
6335 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln

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6336      1315      1320      1325
6338 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
6339      1330      1335      1340
6341 Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
E--> 6342 1345      1350      1355      1360
6344 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
6345      1365      1370      1375
6347 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
6348      1380      1385      1390
6350 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
6351      1395      1400      1405
6353 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
6354      1410      1415      1420
6356 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 6357 1425      1430      1435      1440
6359 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
6360      1445      1450      1455
6362 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
6363      1460      1465      1470
6365 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
6366      1475      1480      1485
6368 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
6369      1490      1495      1500
6371 Gln Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
E--> 6372 1505      1510      1515      1520
6374 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
6375      1525      1530      1535
6377 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
6378      1540      1545      1550
6380 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
6381      1555      1560      1565
6383 Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
6384      1570      1575      1580
6386 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
E--> 6387 1585      1590      1595      1600
6389 Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
6390      1605      1610      1615
6392 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
6393      1620      1625      1630
6395 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
6396      1635      1640      1645
6398 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
6399      1650      1655      1660
6401 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
E--> 6402 1665      1670      1675      1680
6404 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
6405      1685      1690      1695
6407 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
6408      1700      1705      1710

```

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479
 DATE: 12/07/2000
 TIME: 07:23:34

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\1721479.raw

6410 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
 6411 1715 1720 1725
 6413 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
 6414 1730 1735 1740
 6416 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Leu Ala
 E--> 6417 1745 1750 1755 1760
 6419 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg Met Ser Thr Asn Pro
 6420 1765 1770 1775
 6422 Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
 6423 1780 1785 1790
 6425 Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val Tyr Leu Leu
 6426 1795 1800 1805
 6428 Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr Ser
 6429 1810 1815 1820
 6431 Gly Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg
 E--> 6432 1825 1830 1835 1840
 6434 Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu
 6435 1845 1850 1855
 6437 Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg
 6438 1860 1865 1870
 6440 Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Arg Ser Arg
 6441 1875 1880 1885
 6443 Asn Leu Gly Lys
 6444 1890
 7432 <210> SEQ ID NO: 15
 7433 <211> LENGTH: 1944
 7434 <212> TYPE: PRT
 7435 <213> ORGANISM: Artificial Sequence
 7437 <220> FEATURE:
 7438 <223> OTHER INFORMATION: Description of Artificial Sequence:
 7439 pd.delta.NS3NS5.pj.core173
 7441 <400> SEQUENCE: 15
 7442 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
 7443 1 5 10 15
 7445 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
 7446 20 25 30
 7448 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
 7449 35 40 45
 7451 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
 7452 50 55 60
 7454 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
 7455 65 70 75 80
 7457 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
 7458 85 90 95
 7460 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
 7461 100 105 110
 7463 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
 7464 115 120 125
 7466 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val

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RAW SEQUENCE LISTING

DATE: 12/07/2000

PATENT APPLICATION: US/09/721,479

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

7467      130      135      140
7469 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
7470 145      150      155      160
7472 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
7473      165      170      175
7475 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
7476      180      185      190
7478 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
7479      195      200      205
7481 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
7482      210      215      220
7484 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
7485 225      230      235      240
7487 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
7488      245      250      255
7490 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
7491      260      265      270
7493 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
7494      275      280      285
7496 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
7497      290      295      300
7499 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
7500 305      310      315      320
7502 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
7503      325      330      335
7505 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
7506      340      345      350
7508 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
7509      355      360      365
7511 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
7512      370      375      380
7514 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
7515 385      390      395      400
7517 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
7518      405      410      415
7520 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
7521      420      425      430
7523 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
7524      435      440      445
7526 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
7527      450      455      460
7529 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
7530 465      470      475      480
7532 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
7533      485      490      495
7535 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
7536      500      505      510
7538 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
7539      515      520      525

```

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
 TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

7541 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
7542      530      535      540
7544 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
7545 545      550      555      560
7547 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
7548      565      570      575
7550 Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
7551      580      585      590
7553 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
7554      595      600      605
7556 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
7557      610      615      620
7559 Ala Phe Lys Ile Met Ser Gly Gln Val Pro Ser Thr Glu Asp Leu Val
7560 625      630      635      640
7562 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
7563      645      650      655
7565 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
7566      660      665      670
7568 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
7569      675      680      685
7571 Val Ser Pro Thr His Tyr Val Pro Gln Ser Asp Ala Ala Ala Arg Val
7572      690      695      700
7574 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
7575 705      710      715      720
7577 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
7578      725      730      735
7580 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
7581      740      745      750
7583 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
7584      755      760      765
7586 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
7587      770      775      780
7589 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
7590 785      790      795      800
7592 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
7593      805      810      815
7595 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
7596      820      825      830
7598 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
7599      835      840      845
7601 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
7602      850      855      860
7604 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
7605 865      870      875      880
7607 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
7608      885      890      895
7610 Cys Lys Pro Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
7611      900      905      910
7613 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val

```


RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000
 TIME: 07:23:35

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

```

7614          915          920          925
7616 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
7617          930          935          940
7619 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
7620 945          950          955          960
7622 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
7623          965          970          975
7625 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
7626          980          985          990
7628 Pcp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
7629          995          1000          1005
7631 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
7632 1010          1015          1020
7634 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 7635 1025          1030          1035          1040
7637 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
7638          1045          1050          1055
7640 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
7641          1060          1065          1070
7643 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Arg
7644          1075          1080          1085
7646 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
7647          1090          1095          1100
7649 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Thr Ser Gly Ile
E--> 7650 1105          1110          1115          1120
7652 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
7653          1125          1130          1135
7655 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
7656          1140          1145          1150
7658 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
7659          1155          1160          1165
7661 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
7662          1170          1175          1180
7664 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Lys
E--> 7665 1185          1190          1195          1200
7667 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
7668          1205          1210          1215
7670 Val Tyr Ser Thr Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
7671          1220          1225          1230
7673 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
7674          1235          1240          1245
7676 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
7677          1250          1255          1260
7679 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 7680 1265          1270          1275          1280
7682 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
7683          1285          1290          1295
7685 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
7686          1300          1305          1310

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

7688 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
7689      1315      1320      1325
7691 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
7692      1330      1335      1340
7694 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
E--> 7695 345      1350      1355      1360
7697 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
7698      1365      1370      1375
7700 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
7701      1380      1385      1390
7703 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
7704      1395      1400      1405
7706 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Glu Cys Cys Asp
7707      1410      1415      1420
7709 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 7710 425      1430      1435      1440
7712 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
7713      1445      1450      1455
7715 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
7716      1460      1465      1470
7718 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
7719      1475      1480      1485
7721 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
7722      1490      1495      1500
7724 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
E--> 7725 505      1510      1515      1520
7727 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
7728      1525      1530      1535
7730 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
7731      1540      1545      1550
7733 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
7734      1555      1560      1565
7736 Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
7737      1570      1575      1580
7739 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
E--> 7740 585      1590      1595      1600
7742 Ala Arg Met Ile Leu Met Thr His Phe Ser Val Leu Ile Ala Arg
7743      1605      1610      1615
7745 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
7746      1620      1625      1630
7748 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
7749      1635      1640      1645
7751 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
7752      1650      1655      1660
7754 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
E--> 7755 665      1670      1675      1680
7757 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
7758      1685      1690      1695
7760 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

7761          1700          1705          1710
7763 Lys Leu Lys Leu Thr Pro Ile Ala Ala Gly Gln Leu Asp Leu Ser
7764          1715          1720          1725
7766 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
7767          1730          1735          1740
7769 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala
E--> 7770 745          1750          1755          1760
7772 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg Met Ser Thr Asn Pro
7773          1765          1770          1775
7775 Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
7776          1780          1785          1790
7778 Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Tyr Leu Leu
7779          1795          1800          1805
7781 Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr Ser
7782          1810          1815          1820
7784 Gln Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg
E--> 7785 825          1830          1835          1840
7787 Arg Pro Gln Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu
7788          1845          1850          1855
7790 Tyr Gly Asn Gln Gly Cys Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg
7791          1860          1865          1870
7793 Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Ser Arg
7794          1875          1880          1885
7796 Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu
7797          1890          1895          1900
7799 Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu Gly Gly Ala Ala Arg
E--> 7800 905          1910          1915          1920
7802 Ala Leu Ala His Gly Val Arg Val Leu Glu Asp Gly Val Asn Tyr Ala
7803          1925          1930          1935
7805 Thr Gly Asn Leu Pro Gly Cys Ser
7806          1940
8786 <210> SEQ ID NO: 17
8787 <211> LENGTH: 1911
8788 <212> TYPE: PRT
8789 <213> ORGANISM: Artificial Sequence
8792 <220> FEATURE:
8793 <223> OTHER INFORMATION: Description of Artificial Sequence:
8794          pd.delta.NS3NS5.pj.core140
8796 <400> SEQUENCE: 17
8797 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
8798      1          5          10          15
8800 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
8801          20          25          30
8803 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
8804          35          40          45
8806 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly
8807          50          55          60
8809 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
8810 65          70          75          80

```

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RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479
 DATE: 12/07/2000
 TIME: 07:23:35

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

```

8812 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
8813                               85                               90                               95
8815 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
8816                               100                              105                              110
8818 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
8819                               115                              120                              125
8821 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
8822                               130                              135                              140
8824 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
8825 145                               150                              155                              160
8827 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
8828                               165                              170                              175
8830 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
8831                               180                              185                              190
8833 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
8834                               195                              200                              205
8836 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
8837                               210                              215                              220
8839 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
8840 225                               230                              235                              240
8842 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
8843                               245                              250                              255
8845 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
8846                               260                              265                              270
8848 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
8849                               275                              280                              285
8851 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
8852                               290                              295                              300
8854 Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly
8855 305                               310                              315                              320
8857 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
8858                               325                              330                              335
8860 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
8861                               340                              345                              350
8863 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
8864                               355                              360                              365
8866 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
8867                               370                              375                              380
8869 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
8870 385                               390                              395                              400
8872 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
8873                               405                              410                              415
8875 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
8876                               420                              425                              430
8878 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
8879                               435                              440                              445
8881 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
8882                               450                              455                              460
8884 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\L2072000\I721479.raw

```

8885 465          470          475          480
8887 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
8888          485          490          495
8890 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
8891          500          505          510
8893 Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
8894          515          520          525
8896 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
8897          530          535          540
8899 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
8900 545          550          555          560
8902 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
8903          565          570          575
8905 Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
8906          580          585          590
8908 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
8909          595          600          605
8911 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
8912          610          615          620
8914 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
8915 625          630          635          640
8917 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
8918          645          650          655
8920 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
8921          660          665          670
8923 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
8924          675          680          685
8926 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
8927          690          695          700
8929 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
8930 705          710          715          720
8932 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
8933          725          730          735
8935 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
8936          740          745          750
8938 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
8939          755          760          765
8941 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
8942          770          775          780
8944 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
8945 785          790          795          800
8947 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
8948          805          810          815
8950 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
8951          820          825          830
8953 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu
8954          835          840          845
8956 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
8957          850          855          860

```

RAW SEQUENCE LISTING

DATE: 12/07/2000

PATENT APPLICATION: US/09/721,479

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

8959 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
8960 865 870 875 880
8962 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
8963 885 890 895
8965 Cys Lys Pro Leu Leu Arg Glu Gln Val Ser Phe Arg Val Gly Leu His
8966 900 905 910
8968 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
8969 915 920 925
8971 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
8972 930 935 940
8974 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
8975 945 950 955 960
8977 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
8978 965 970 975
8980 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
8981 980 985 990
8983 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
8984 995 1000 1005
8986 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
8987 1010 1015 1020
8989 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 8990 1025 1030 1035 1040
8992 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
8993 1045 1050 1055
8995 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
8996 1060 1065 1070
8998 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Pro Arg
8999 1075 1080 1085
9001 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
9002 1090 1095 1100
9004 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile
E--> 9006 105 1110 1115 1120
9007 Thr Gly Asp Asn Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
9008 1125 1130 1135
9010 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
9011 1140 1145 1150
9013 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
9014 1155 1160 1165
9016 Ser Ser Glu Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
9017 1170 1175 1180
9019 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
E--> 9020 185 1190 1195 1200
9022 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
9023 1205 1210 1215
9025 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
9026 1220 1225 1230
9028 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
9029 1235 1240 1245
9031 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

9032      1250      1255      1260
9034 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 9035 265      1270      1275      1280
9037 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
9038      1285      1290      1295
9040 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
9041      1300      1305      1310
9043 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
9044      1315      1320      1325
9046 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
9047      1330      1335      1340
9049 Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
E--> 9050 345      1350      1355      1360
9052 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
9053      1365      1370      1375
9055 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
9056      1380      1385      1390
9058 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
9059      1395      1400      1405
9061 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
9062      1410      1415      1420
9064 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 9065 425      1430      1435      1440
9067 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
9068      1445      1450      1455
9070 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
9071      1460      1465      1470
9073 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
9074      1475      1480      1485
9076 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
9077      1490      1495      1500
9079 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
E--> 9080 505      1510      1515      1520
9082 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
9083      1525      1530      1535
9085 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
9086      1540      1545      1550
9088 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
9089      1555      1560      1565
9091 Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
9092      1570      1575      1580
9094 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
E--> 9095 585      1590      1595      1600
9097 Ala Arg Met Ile Leu Met Thr His Phe Phe Ser Val Leu Ile Ala Arg
9098      1605      1610      1615
9100 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr
9101      1620      1625      1630
9103 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
9104      1635      1640      1645

```

RAW SEQUENCE LISTING

DATE: 12/07/2000

PATENT APPLICATION: US/09/721,479

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\1721479.raw

```

9106 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
9107 1650 1655 1660
9109 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
E--> 9110 665 1670 1675 1680
9112 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
9113 1685 1690 1695
9115 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
9116 1700 1705 1710
9118 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
9119 1715 1720 1725
9121 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
9122 1730 1735 1740
9124 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala
E--> 9125 745 1750 1755 1760
9127 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg Met Ser Thr Asn Pro
9128 1765 1770 1775
9130 Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
9131 1780 1785 1790
9133 Val Lys Phe Pro Gly Gly Gly Ile Val Gly Gly Val Tyr Leu Leu
9134 1795 1800 1805
9136 Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr Ser
9137 1810 1815 1820
9139 Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg
E--> 9140 825 1830 1835 1840
9142 Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu
9143 1845 1850 1855
9145 Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg
9146 1860 1865 1870
9148 Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Ser Arg
9149 1875 1880 1885
9151 Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu
9152 1890 1895 1900
9154 Met Gly Tyr Ile Pro Leu Val
E--> 9155 905 1910
10139 <210> SEQ ID NO: 19
10140 <211> LENGTH: 1921
10141 <212> TYPE: PRT
10142 <213> ORGANISM: Artificial Sequence
10144 <220> FEATURE:
10145 <223> OTHER INFORMATION: Description of Artificial Sequence:
10146 pd.delta.NS3NS5.pj.core150
10148 <400> SEQUENCE: 19
10149 Met Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro
10150 1 5 10 15
10152 Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Ala His
10153 20 25 30
10155 Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile Thr Thr Gly
10156 35 40 45
10158 Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly

```

pr 50-52

RAW SEQUENCE LISTING

DATE: 12/07/2000

PATENT APPLICATION: US/09/721,479

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

10159      50      55      60
10161 Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ser
10162 65      70      75      80
10164 Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala
10165      85      90      95
10167 Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
10168      100      105      110
10170 Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val Ala Leu Ser
10171      115      120      125
10173 Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro Leu Glu Val
10174      130      135      140
10176 Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys Lys Lys Cys
10177 145      150      155      160
10179 Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn Ala Val Ala
10180      165      170      175
10182 Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser Gly Asp Val
10183      180      185      190
10185 Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe
10186      195      200      205
10188 Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe
10189      210      215      220
10191 Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp
10192 225      230      235      240
10194 Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro
10195      245      250      255
10197 Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe
10198      260      265      270
10200 Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr
10201      275      280      285
10203 Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn
10204      290      295      300
10206 Thr Pro Gly Leu Pro Val Cys Glu Asp His Leu Glu Phe Trp Glu Gly
10207 305      310      315      320
10209 Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr
10210      325      330      335
10212 Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr
10213      340      345      350
10215 Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp
10216      355      360      365
10218 Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu
10219      370      375      380
10221 Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Ile Thr Leu Thr His Pro
10222 385      390      395      400
10224 Val Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu Glu Val Val
10225      405      410      415
10227 Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu Ala Ala
10228      420      425      430
10230 Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu
10231      435      440      445

```

RAW SEQUENCE LISTING

DATE: 12/07/2000

PATENT APPLICATION: US/09/721,479

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

10233 Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu
10234      450      455      460
10236 Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr Ile Glu Gln
10237 465      470      475      480
10239 Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu
10240      485      490      495
10242 Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr
10243      500      505      510
10245 Asn Trp Glu Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe
10246      515      520      525
10248 Ile Ser Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn
10249      530      535      540
10251 Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val Thr Ser Pro
10252 545      550      555      560
10254 Leu Thr Thr Ser Gln Thr Leu Leu Phe Asn Ile Leu Gly Gly Trp Val
10255      565      570      575
10257 Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe Val Gly Ala
10258      580      585      590
10260 Gly Leu Ala Gly Ala Ala Ile Gly Ser Val Gly Leu Gly Lys Val Leu
10261      595      600      605
10263 Ile Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly Ala Leu Val
10264      610      615      620
10266 Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu Asp Leu Val
10267 625      630      635      640
10269 Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val
10270      645      650      655
10272 Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala
10273      660      665      670
10275 Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His
10276      675      680      685
10278 Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala Ala Arg Val
10279      690      695      700
10281 Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu Arg Arg Leu
10282 705      710      715      720
10284 His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser Gly Ser Trp
10285      725      730      735
10287 Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser Asp Phe Lys
10288      740      745      750
10290 Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly Ile Pro Phe
10291      755      760      765
10293 Val Ser Cys Gln Arg Gly Tyr Lys Gly Val Trp Arg Gly Asp Gly Ile
10294      770      775      780
10296 Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly His Val Lys
10297 785      790      795      800
10299 Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg Asn Met Trp
10300      805      810      815
10302 Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro Cys Thr Pro
10303      820      825      830
10305 Leu Pro Ala Pro Asn Tyr Thr Phe Ala Leu Trp Arg Val Ser Ala Glu

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

10306      835      840      845
10308 Glu Tyr Val Glu Ile Arg Gln Val Gly Asp Phe His Tyr Val Thr Gly
10309      850      855      860
10311 Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Val Pro Ser Pro Glu
10312 865      870      875      880
10314 Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe Ala Pro Pro
10315      885      890      895
10317 Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val Gly Leu His
10318      900      905      910
10320 Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu Pro Asp Val
10321      915      920      925
10323 Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu
10324      930      935      940
10326 Ala Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser Val Ala Ser
10327 945      950      955      960
10329 Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala Thr Cys Thr
10330      965      970      975
10332 Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
10333      980      985      990
10335 Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu Ser Glu Asn
10336      995      1000      1005
10338 Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala Glu Glu Asp
10339      1010      1015      1020
10341 Glu Arg Glu Ile Ser Val Pro Ala Glu Ile Leu Arg Lys Ser Arg Arg
E--> 10342 1025      1030      1035      1040
10344 Phe Ala Gln Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr Asn Pro Pro
10345      1045      1050      1055
10347 Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro Val Val His
10348      1060      1065      1070
10350 Gly Cys Pro Leu Pro Pro Pro Lys Ser Pro Pro Val Pro Pro Arg
10351      1075      1080      1085
10353 Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser Thr Ala Leu
10354      1090      1095      1100
10356 Ala Glu Leu Ala Thr Arg Ser Phe Gly Ser Ser Ser Thr Ser Gly Ile
E--> 10357 1105      1110      1115      1120
10359 Thr Gly Asp Asn Thr Thr Thr Ser Ser Glu Pro Ala Pro Ser Gly Cys
10360      1125      1130      1135
10362 Pro Pro Asp Ser Asp Ala Glu Ser Tyr Ser Ser Met Pro Pro Leu Glu
10363      1140      1145      1150
10365 Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp Ser Thr Val
10366      1155      1160      1165
10368 Ser Ser Gln Ala Asn Ala Glu Asp Val Val Cys Cys Ser Met Ser Tyr
10369      1170      1175      1180
10371 Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu Glu Gln Lys
E--> 10372 1185      1190      1195      1200
10374 Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His His Asn Leu
10375      1205      1210      1215
10377 Val Tyr Ser Thr Thr Ser Arg Ser Ala Cys Gln Arg Gln Lys Lys Val
10378      1220      1225      1230

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/721,479

DATE: 12/07/2000

TIME: 07:23:35

Input Set : A:\seqlist.txt

Output Set: N:\CRF3\12072000\I721479.raw

```

10380 Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln Asp Val Leu
10381          1235          1240          1245
10383 Lys Glu Val Lys Ala Ala Ala Ser Lys Val Lys Ala Asn Leu Leu Ser
10384          1250          1255          1260
10386 Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala Lys Ser Lys
E--> 10387 265          1270          1275          1280
10389 Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg Lys Ala Val
10390          1285          1290          1295
10392 Thr His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp Asn Val Thr
10393          1300          1305          1310
10395 Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Gln
10396          1315          1320          1325
10398 Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val Phe Pro Asp
10399          1330          1335          1340
10401 Val Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Val Val Thr
E--> 10402 345          1350          1355          1360
10404 Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe Gln Tyr Ser
10405          1365          1370          1375
10407 Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys Ser Lys Lys
10408          1380          1385          1390
10410 Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val
10411          1395          1400          1405
10413 Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln Cys Cys Asp
10414          1410          1415          1420
10416 Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr Glu Arg Leu
E--> 10417 425          1430          1435          1440
10419 Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn Cys Gly Tyr
10420          1445          1450          1455
10422 Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys Gly Asn Thr
10423          1460          1465          1470
10425 Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala Ala Gly Leu
10426          1475          1480          1485
10428 Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Cys
10429          1490          1495          1500
10431 Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg Ala Phe Thr
E--> 10432 505          1510          1515          1520
10434 Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Gln Pro
10435          1525          1530          1535
10437 Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val
10438          1540          1545          1550
10440 Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr Arg Asp Pro
10441          1555          1560          1565
10443 Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg His Thr Pro
10444          1570          1575          1580
10446 Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro Thr Leu Trp
E--> 10447 585          1590          1595          1600
10449 Ala Arg Met Ile Leu Met Thr His Phe Ser Val Leu Ile Ala Arg
10450          1605          1610          1615
10452 Asp Gln Leu Glu Gln Ala Leu Asp Cys Glu Ile Tyr Gly Ala Cys Tyr

```

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/721,479
 DATE: 12/07/2000
 TIME: 07:23:35

Input Set : A:\seqlist.txt
 Output Set: N:\CRF3\12072000\I721479.raw

```

10453          1620          1625          1630
10455 Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg Leu His Gly
10456          1635          1640          1645
10458 Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu Ile Asn Arg
10459          1650          1655          1660
10461 Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu Arg Ala Trp
E--> 10462 665          1670          1675          1680
10464 Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ala Arg Gly Gly
10465          1685          1690          1695
10467 Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala Val Arg Thr
10468          1700          1705          1710
10470 Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Gln Leu Asp Leu Ser
10471          1715          1720          1725
10473 Gly Trp Phe Thr Ala Gly Tyr Ser Gly Gly Asp Ile Tyr His Ser Val
10474          1730          1735          1740
10476 Ser His Ala Arg Pro Arg Trp Ile Trp Phe Cys Leu Leu Leu Ala
E--> 10477 745          1750          1755          1760
10479 Ala Gly Val Gly Ile Tyr Leu Leu Pro Asn Arg Met Ser Thr Asn Pro
10480          1765          1770          1775
10482 Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn Arg Arg Pro Gln Asp
10483          1780          1785          1790
10485 Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly Gly Val Tyr Leu Leu
10486          1795          1800          1805
10488 Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala Thr Arg Lys Thr Ser
10489          1810          1815          1820
10491 Gln Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro Ile Pro Lys Ala Arg
E--> 10492 825          1830          1835          1840
10494 Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly Tyr Pro Trp Pro Leu
10495          1845          1850          1855
10497 Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp Leu Leu Ser Pro Arg
10498          1860          1865          1870
10500 Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro Arg Arg Arg Ser Arg
10501          1875          1880          1885
10503 Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys Gly Phe Ala Asp Leu
10504          1890          1895          1900
10506 Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Leu Gly Gly Ala Ala Arg
E--> 10507 905          1910          1915          1920
10509 Ala

```

VERIFICATION SUMMARY DATE: 12/07/2000
PATENT APPLICATION: US/09/721,479 TIME: 07:23:36

Input Set : A:\seqlist.txt
Output Set: N:\CRF3\12072000\I721479.raw

L:12 M:270 C: Current Application Number differs, Replaced Application Number
L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:823 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:2
M:332 Repeated in SeqNo=2
L:1571 M:258 W: Mandatory Feature missing, <220> FEATURE:
L:1571 M:258 W: Mandatory Feature missing, <223> OTHER INFORMATION:
L:1765 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:4
M:332 Repeated in SeqNo=4
L:3677 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:9
M:332 Repeated in SeqNo=9
L:4964 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:11
M:332 Repeated in SeqNo=11
L:6076 M:252 E: No. of Seq. differs. <211>LENGTH:Input:20220 Found:20160 SEQ:12
L:6282 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:13
M:332 Repeated in SeqNo=13
L:7635 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:15
M:332 Repeated in SeqNo=15
L:8990 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:17
M:332 Repeated in SeqNo=17
L:10342 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:19
M:332 Repeated in SeqNo=19